

REMARKS

Claims 1-18 are pending in the application. No claims are presently allowed.

Claim Rejections – 35 U.S.C. § 102

Claims 1, 2, 4, 10-12, 17, and 18 have been rejected under 35 U.S.C § 102(b) as allegedly anticipated by Watanabe et al. (*J. Electrochem. Soc.*).

In order to make a *prima facie* case of anticipation, the reference must disclose each limitation of the claim. *Verdegal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053, 814 F.2d 628, 631 (Fed. Cir. 1987); MPEP 2131. Among other deficiencies, the reference does not disclose the limitation in claims 1, 11, and 17 that the composition comprises a hydrate. Watanabe discloses platinum dispersed in tin oxide. No hydrate ($\cdot yH_2O$) form of tin oxide is disclosed. Although it is stated that “alkaline pretreatment of SnO_2 causes the pH response of the electrode to be enhanced, evidently through a superficial hydration,” (p. 60, col. 1, lines 36-39) hydration is defined in Watanabe as formation of $-Sn-OH$ (p. 60, col. 1, lines 39-40). This is not the same as $SnO_x \cdot yH_2O$. As all the claim limitations have not been disclosed, a *prima facie* case of anticipation has not been made.

The Examiner responded to the above argument by citing a definition of hydration which precludes the splitting of the H-OH bond, and concluding that the formula stated in Watanabe, $-Sn-OH$, could have been written as $SnO_x \cdot yH_2O$. However, Watanabe teaches hydrolysis of $Sn=O$ bonds. Even if the reference uses the terms hydration and hydrolysis inconsistently, the clause at p. 60, col. 1, lines 39-40 clearly states that a tin-oxygen double bond is converted to a tin-oxygen single bond, the oxygen becoming part of a hydroxyl group. The oxygen atom begins and ends this reaction bonded to the tin atom, without the addition of a whole water molecule. Watanabe is not using the term “hydration” in the sense used by the Examiner. The same paragraph of the reference goes on to explain that surface $Sn-OH$ protons maybe replaced by Fe(III) or Pb(II). If the Examiner’s interpretation of $Sn-OH$ were correct, the result of this replacement would be, for example, $SnO_x \cdot y(FeHO)^{+2}$. This is not a plausible result.

Claims 2, 4, 10, 12, and 18 depend from and contain all the limitations of claims 1, 11, or 17. The arguments regarding the lack of *prima facie* for claims 1, 11, and 17 are applicable to claims 2, 4, 10, 12, and 18.

Claims 1, 2, 4, 5, 12, 13, 15, and 17 have been rejected under 35 U.S.C § 102(b) as allegedly anticipated by Gardner et al. (*J. Phys. Chem.*).

As in Watanabe, Gardner does not disclose a hydrate as recited in claims 1, 15, and 17. Although dehydration of the material is disclosed, this does not imply that the material had been a hydrate. Gardner discloses “surface dehydration caused by the combination of surface hydroxyl groups and desorption of water” (p. 835, col. 1, lines 27-28). The water is made from hydroxyl groups, not hydrate groups. There is no disclosure that there was ever a hydrate group present. The Examiner stated that “Pt/SnO₂ is humidified.” Humidification would indicate merely that water molecules are present. This does not show the chemical reaction needed to form the presently claimed hydrate compound. As all the claim limitations have not been disclosed, a *prima facie* case of anticipation has not been made.

The Examiner responded to the above argument by citing a definition of dehydration stating that it involves removal of one or more molecules of water from a chemical compound, and concluding that the compound of Gardner was a hydrate in order to undergo dehydration. However, the cited definition gives as an example, conversion of ethanol to ethylene ($\text{CH}_3\text{-CH}_2\text{OH} \rightarrow \text{CH}_2=\text{CH}_2 + \text{H}_2\text{O}$). However, ethanol is not a hydrate of the claimed “ $\cdot \cdot \cdot \text{yH}_2\text{O}$ ” form. The Examiner’s definition does not support the proposition that the dehydrated compound of Gardner had been a hydrate.

Claims 2, 4, 5, 12, and 13 depend from and contain all the limitations of claims 1, 15, and 17. The arguments regarding the lack of *prima facie* for claims 1, 15, and 17 are applicable to claims 2, 4, 5, 12, and 13.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 2, and 4-16 have been rejected under 35 U.S.C § 103(a) as being allegedly unpatentable over Watanabe et al. (US 5,922,487, “Watanabe 487”) in view of Watanabe.

In order to make a *prima facie* case of obviousness, each claim limitation must be disclosed in the references (MPEP 2143.03). Among other deficiencies, none of the references discloses the limitation in claims 1, 11, 15, and 17 that the composition comprises a hydrate. As explained above Watanabe does not disclose a hydrate. Watanabe 487 discloses Pt/Sn alloys. No tin oxide or hydrates are disclosed. As all the claim limitations of claim 1 are not disclosed in the reference, a *prima facie* case of obviousness has not been made.

Claims 2, 4-10, 12-14, and 16 depend from and contain all the limitations of claims 1, 11, or 15. The arguments regarding the lack of *prima facie* for claims 1, 11, and 15 are applicable to claims 2, 4-10, 12-14, and 16.

Claim 3 has been rejected under 35 U.S.C § 103(a) as being allegedly unpatentable over Watanabe in view of Katayama et al. (*J. Phys. Chem.*). This is a new rejection not necessitated by Applicants' amendment or by submission of an IDS, prompting the attached Petition to Withdraw Finality of Office Action.

As explained above Watanabe does not disclose a hydrate. As stated by the Examiner, Katayama discloses Pt/SnO₂, which is not the same as the claimed hydrate. As all the claim limitations of claim 3 are not disclosed in the reference, a *prima facie* case of obviousness has not been made.

Claim 3 has been rejected under 35 U.S.C § 103(a) as being allegedly unpatentable over Gardner in view of Katayama. This is also a new rejection not necessitated by Applicants' amendment or by submission of an IDS.


As explained above Gardner does not disclose a hydrate. As stated by the Examiner, Katayama discloses Pt/SnO₂, which is not the same as the claimed hydrate. As all the claim limitations of claim 3 are not disclosed in the reference, a *prima facie* case of obviousness has not been made.

In view of the foregoing, it is submitted that the application is now in condition for allowance.

In the event that a fee is required, please charge the fee to Deposit Account No. 50-0281,

and in the event that there is a credit due, please credit Deposit Account No. 50-0281.

Respectfully submitted,



Joseph T. Grunkemeyer
Reg. No. 46,746
Phone No. 202-404-1556
Office of the Associate Counsel
(Patents), Code 1008.2
Naval Research Laboratory
4555 Overlook Ave, SW
Washington, DC 20375-5325